AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) An electric arc welder comprising a gated bridge driven by the secondary of an input transformer with an output connected across the electrode and workpiece of a welding operation through a DC choke and a background current circuit including a full-wave rectifier with an AC input and a rectified DC output, ~~and~~ a current control background resistance and filter network, said background current circuit connected in series with said welding operation and said DC choke, wherein said input of said full wave rectifier is connected in parallel with said secondary winding driving said gated bridge.

2. (Original) An electric arc welder as defined in claim 1 wherein said gated bridge includes alternately gated SCRs.

3. (Original) An electric arc welder as defined in claim 2 wherein said gated bridge is parallel with said welding operation to perform DC welding.

4. (Original) An electric arc welder as defined in claim 1 wherein said gated bridge is parallel with said welding operation to perform DC welding.

5. (Original) An electric arc welder as defined in claim 2 wherein said gated bridge is in series with said welding operations to perform AC welding.

6. (Original) An electric arc welder as defined in claim 1 wherein said gated bridge is in series with said welding operations to perform AC welding.

7. (Original) An electric arc welder as defined in claim 6 wherein said gated bridge includes a first set of gated switches operated during a first polarity for a first given portion of such first polarity and a second set of gated switches operated during a polarity opposite to said first polarity for a second given portion of said opposite polarity.

8. (Original) An electric arc welder as defined in claim 4 wherein said gated bridge includes a first set of gated switches operated during a first polarity for a first given portion of such first polarity and a second set of gated switches operated during a polarity opposite to said first polarity for a second given portion of said opposite polarity.

9. (Original) An electric arc welder as defined in claim 2 wherein said gated bridge includes a first set of gated switches operated during a first polarity for a first given portion of such first polarity and a second set of gated switches operated during a polarity opposite to said first polarity for a second given portion of said opposite polarity.

10. (Original) An electric arc welder as defined in claim 1 wherein said gated bridge includes a first set of gated switches operated during a first polarity for a first given portion of such first polarity and a second set of gated switches operated during a polarity opposite to said first polarity for a second given portion of said opposite polarity.

11. (Original) An electric arc welder as defined in claim 6 wherein said background current resistance is in the range of about 20-30 ohms.

12. (Original) An electric arc welder as defined in claim 4 wherein said background current resistance is in the range of about 20-30 ohms.

13. (Original) An electric arc welder as defined in claim 2 wherein said background current resistance is in the range of about 20-30 ohms.

14. (Original) An electric arc welder as defined in claim 1 wherein said background current resistance is in the range of about 20-40 ohms.

15. (Original) An electric arc welder as defined in claim 14 wherein said resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full wave rectifier.

16. (Original) An electric arc welder as defined in claim 15 wherein input and output resistors have substantially the same ohm value.

17. (Original) An electric arc welder as defined in claim 6 wherein said resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full wave rectifier.

18. (Original) An electric arc welder as defined in claim 17 wherein input and output resistors have substantially the same ohm value.

19. (Original) An electric arc welder as defined in claim 4 wherein said resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full wave rectifier.

20. (Original) An electric arc welder as defined in claim 19 wherein input and output resistors have substantially the same ohm value.

21. (Original) An electric arc welder as defined in claim 2 wherein said resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full wave rectifier.

22. (Original) An electric arc welder as defined in claim 21 wherein input and output resistors have substantially the same ohm value.

23. (Original) An electric arc welder as defined in claim 1 wherein said resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full wave rectifier.

24. (Original) An electric arc welder as defined in claim 23 wherein input and output resistors have substantially the same ohm value.

25. (Currently amended) An electric arc welder comprising a power source driven by a main input transformer with a secondary winding creating an output pulsating current across the electrode and workpiece of a welding operation and a background current circuit including a full-wave rectifier with AC input and a rectified DC output connected in parallel with said power source and a background current resistance in a range of 20-30 ohms.

26. (Canceled)

27. (Currently amended) An electric arc welder as defined in claim ~~26~~ 25 wherein said resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full-wave rectifier.

28. (Original) An electric arc welder as defined in claim 27 wherein input and output resistors have substantially the same ohm value.

29. (Currently amended) An electric arc welder as defined in claim 25 wherein said background resistance is the sum of the resistance of resistors at the input of said full wave rectifier and resistors at the output of said full-wave rectifier.

30. (Original) An electric arc welder as defined in claim 29 wherein input and output resistors have substantially the same ohm value.

31. (Currently amended) An electric arc welder comprising a full-wave gated bridge driven by the secondary of an input transformer with an output connected across the electrode and workpiece of a welding operation and a background current circuit including a full-wave rectifier with an AC input and a rectified DC output, ~~and~~ a current control background resistance and a filter network, said background current circuit connected in series with said welding operation, wherein said input of said full wave rectifier is connected in parallel with said secondary winding driving said gated bridge.

32. (Original) An electric arc welder as defined in claim 31 wherein said gated bridge includes alternately gated SCRs.

33. (Original) An electric arc welder as defined in claim 32 wherein said gated bridge is parallel with said welding operation to perform DC welding.

34. (Original) An electric arc welder as defined in claim 31 wherein said gated bridge is parallel with said welding operation to perform DC welding.

35. (Original) An electric arc welder as defined in claim 32 wherein said gated bridge is in series with said welding operations to perform AC welding.

36. (Original) An electric arc welder as defined in claim 31 wherein said gated bridge is in series with said welding operations to perform AC welding.

37. (Currently amended) An electric arc welder comprising a gated full-wave bridge, two pairs of reverse polarity switches and driven by the secondary of an input transformer with an output connected across the electrode and workpiece of a welding operation and a background current circuit comprising a diode and a resistor in parallel with each switch in said bridge, and a background resistance comprised of a positive half cycle resistance and a negative half cycle resistance, the positive half cycle resistance and negative half cycle resistance having different ohm values.

38. (Canceled)

39. (Original) An electric arc welder as defined in claim 37 wherein said gated bridge is in series with said welding operations to perform AC welding.

40. (Original) An electric arc welder as defined in claim 39 wherein said diodes are connected in a full wave rectifier and said resistors are an input resistor from said rectifier to said bridge and an output resistor from said bridge to said rectifier.

41. (Canceled)

42. (Original) An electric arc welder as defined in claim 37 wherein said diodes are connected in a full wave rectifier and said resistors are an input resistor from said rectifier to said bridge and an output resistor from said bridge to said rectifier.

43. (New) An electric arc welder as defined in claim 1 wherein the filter network further includes a capacitance and a current inrush limiting resistance.

44. (New) An electric arc welder as defined in claim 1 wherein the background resistance is comprised of positive half cycle resistance and negative half cycle resistance, the positive half cycle resistance and negative half cycle resistance having different ohm values.

45. (New) An electric arc welder as defined in claim 25 wherein the background current circuit further includes a filter network, configured to generate a continuous DC background current wave shape by the background current circuit.

46. (New) An electric arc welder as defined in claim 25 wherein the background resistance is comprised of positive half cycle resistance and negative half cycle resistance, the positive half cycle resistance and negative half cycle resistance having different ohm values.

47. (New) An electric arc welder as defined in claim 31 wherein the filter network further includes a capacitance and a current inrush limiting resistance.

48. (New) An electric arc welder as defined in claim 31 wherein the background resistance is comprised of positive half cycle resistance and negative half cycle resistance, the positive half cycle resistance and negative half cycle resistance having different ohm values.

49. (New) An electric arc welder as defined in claim 37 wherein the background current circuit further includes a filter network, configured to generate a continuous DC background current wave shape.

50. (New)An electric arc welder as defined in claim 37 wherein the filter network further includes a capacitance and a current inrush limiting resistance.